

AMENDMENTS

IN THE CLAIMS:

Please amend the claims as follows:

1. (Currently Amended) A method of manufacturing a fuel cell comprising a layer stack of unit cells each including a polymer electrolyte film and gas diffusion electrodes, said method comprising the steps of:

~~fixing a polymer electrolyte film to a gas impermeable dense carbon separator, wherein a gas flow path is formed with the surface of each unit cell;~~

causing the polymer electrolyte film to have a water content of not greater than 4, which is expressed as a molar fraction of H₂O; and

providing a gas-impermeable dense carbon separator which forms a gas flow path with the surface of each diffusion electrode; and

bonding the polymer electrolyte film directly to the carbon separator with an adhesive having a modulus of elasticity of not greater than 10 MPa after cure.

2-3. (Canceled)

4. (Previously Amended) A method in accordance with claim 1, wherein the step of bonding the polymer electrolyte film comprises placing the adhesive having a durometer A hardness of not greater than 90 after cure.

5. (Previously Amended) A method in accordance with claim 1, wherein the step of bonding the polymer electrolyte film comprises providing a pair of carbon separators that are arranged across a pair of gas diffusion electrodes, between which the polymer electrolyte film is interposed.

6. (Original) A method in accordance with claim 1, wherein the step of bonding the polymer electrolyte film comprises placing the adhesive being a modified rubber adhesive comprising a mixture of epoxy resin and modified silicone.

7. (Original) A method in accordance with claim 1, wherein the step of bonding the polymer electrolyte film comprises placing the adhesive including resin beads of a predetermined diameter.

8. (Currently Amended) A method of manufacturing a fuel cell ~~by fixing a polymer electrolyte film to a gas impermeable dense carbon separator comprising a layer stack of unit cells each including a polymer electrolyte film and gas diffusion electrodes~~, said method comprising the steps of:

providing a gas-impermeable dense carbon separator which forms a gas flow path with the surface of each diffusion electrode;

providing an adhesive having a modulus of elasticity of not greater than 10 MPa after cure; and

bonding the polymer electrolyte film directly to the carbon separator with the adhesive.

9. (Previously Amended) A method in accordance with claim 8, wherein the step of bonding the polymer electrolyte film comprises placing the adhesive having a durometer A hardness of not greater than 90 after cure.

10. (Previously Amended) A method in accordance with claim 8, wherein the step of bonding the polymer electrolyte film comprises providing a pair of carbon separators that are arranged across a pair of gas diffusion electrodes, between which the polymer electrolyte film is interposed.

11. (Original) A method in accordance with claim 8, wherein the step of providing the adhesive comprises providing the adhesive being a modified rubber adhesive comprising a mixture of epoxy resin and modified silicone.

12. (Original) A method in accordance with claim 8, wherein the adhesive includes resin beads of a predetermined diameter.

13-16. (Canceled)

17. (Currently Amended) A fuel cell, comprising:
a layer stack of unit cells each including a polymer electrolyte film and gas diffusion electrodes;

a gas-impermeable dense carbon separator which forms a gas flow path with the surface of each diffusion electrode; and

a polymer electrolyte film that has a water content of not greater than 4, which is expressed as a molar fraction of H₂O, and is bonded directly to the carbon separator with an adhesive having a modulus of elasticity of not greater than 10 MPa after cure.

18. (Currently Amended) A fuel cell, comprising:
a layer stack of unit cells each including a polymer electrolyte film and gas diffusion electrodes;

a polymer electrolyte film;

a gas-impermeable dense carbon separator which forms a gas flow path with the surface of each diffusion electrode; and

an adhesive that is used to bond the polymer electrolyte film directly to the carbon separator and has a modulus of elasticity of not greater than 10 MPa after cure.

19. (Currently Amended) A fuel cell, comprising:
a layer stack of unit cells each including a polymer electrolyte film and gas diffusion electrodes;

a polymer electrolyte film;

a gas-impermeable dense carbon separator which forms a gas flow path with the surface of each diffusion electrode; and

an adhesive that is used to bond the polymer electrolyte film directly to the carbon separator and has a durometer A hardness of not greater than 90 after cure.